

Work Order ID 100664

April-26-13 9:11:15 AM

Res U
100664

Page 1

Item ID: D2741

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Blade, 350 Skidtube

Start Date: 4/26/13 Start Qty: 40.00

40

Cust Item ID:

Required Date: 5/03/13 Req'd Qty: 40.00

40

Customer:

Reference:

Approvals:

Process Plan: *W*

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D2741

Rev C

100

0.00

100

BAND SAW

Bandsaw

Memo

0.00

Jeaspa Bandsaw

Cut blanks 13.850" long +0.063" -0.000"

ML/MH

13/05/17

110

0.00

110

HAAS CNC VERTICAL MACHINING #1

HAAS I

Memo

0.00

HAAS CNC vertical machine #1

1-Machine per folio FA108

ML/MH
JRE/ba

13/05/17
2013/05-19

120

0.00

120

QC2- Inspect parts off machine FA1/FA1B

QC

Memo

0.00

Quality Control

ML/MH

13/05/17

100664

April-26-13 9:11:15 AM

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 4/26/13 **Start Qty:** 40.00 ***40***

Cust Item ID:

Required Date: 5/03/13 **Req'd Qty:** 40.00 ***10***

Customer:

Reference:

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130 QC8- Inspect parts - second check

0.00

130

OC

Memo

00

Quality Control

140

0.00

140

Small Fab

Small Fab

Memo

0.00

Small Fab

1-Deburr2-Bend per Dwg D2741

150

QC5- Inspect part completeness to step on W/O

0.00

150

OC

Memo

0.00

Quality Control

Work Order ID 100664

April-26-13 9:11:15 AM

100664

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Item ID: D2741 Accept *N900040100* Setup Start *NS1*
Revision ID: Stop *NS2*
Item Name: Blade, 350 Skidtube
Start Date: 4/26/13 Start Qty: 40.00 *40* Cust Item ID:
Required Date: 5/03/13 Req'd Qty: 40.00 *40* Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 *160* Outsource1 Outsource process - Heat Treat	 Memo Issue P/O: 19958 Harden material as per Dwg D2741Min. Ultimate Tensile Strength = 152 ksi (34-40 HRC)Min. Yield Tensile Strength = 141 ksiTest report or Certification required Sand blast parts	0.00 0.00							CL 13/05/23 (40)
170 *170* Packaging Packaging	 Memo Receive & Inspect for Damage & Mat'l Certs Ensure Test report or Certification attached	0.00 0.00							4/30/11 (40)
180 *180* QC Quality Control	 Memo QC5- Inspect part completeness to step on W/O	0.00 0.00							40 Cann

Work Order ID 100664

100664

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April-26-13 9:11:15 AM

Item ID: D2741

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Blade, 350 Skidtube

Start Date: 4/26/13 Start Qty: 40.00

40

Cust Item ID:

Required Date: 5/03/13 Req'd Qty: 40.00

40

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start *NR1*

QC: Date: SPC (Y/N): Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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190

0.00

190

Small Fab

Small Fab

Memo

0.00

Small Fab

1-Pass in deburring machine2-Grind off edges

195

0.00

195

HandFinish

Memo

0.00

Hand Finishing

clean with wash & wipe to remove oil

200

White Gloss(Ref:4.3.5.2) per QSI005 4.3-Steel

0.00

200

Powdercoat

Memo

0.00

Powder Coating

START TIME: FINISH TIME: OVEN TEMPERATURE:

FINISH TIME:

400 F

1:45


m125620

40 3611

40 X 8 m/f 13/06/13

Page 5

Quality Control

HO 6 13-6-13. 

40 8 13-6-14

mw 1306-14

Picklist Print

April-26-13 9:11:15 AM

Page 1

Work Order ID: 100664

Parent Item: D2741

Parent Item Name: Blade, 350 Skidtube

Start Date: 4/26/13

Required Date: 5/03/13

Start Qty: 40.00

Required Qty: 40.00

Comments: IPP Rev: D00.11.15Removed P/O turning - in house processEC
IPP Rev: E 06-03-20 As Per Rev C JLM
IPP Rev: F 06.04.20Added grinding after heat treating EC

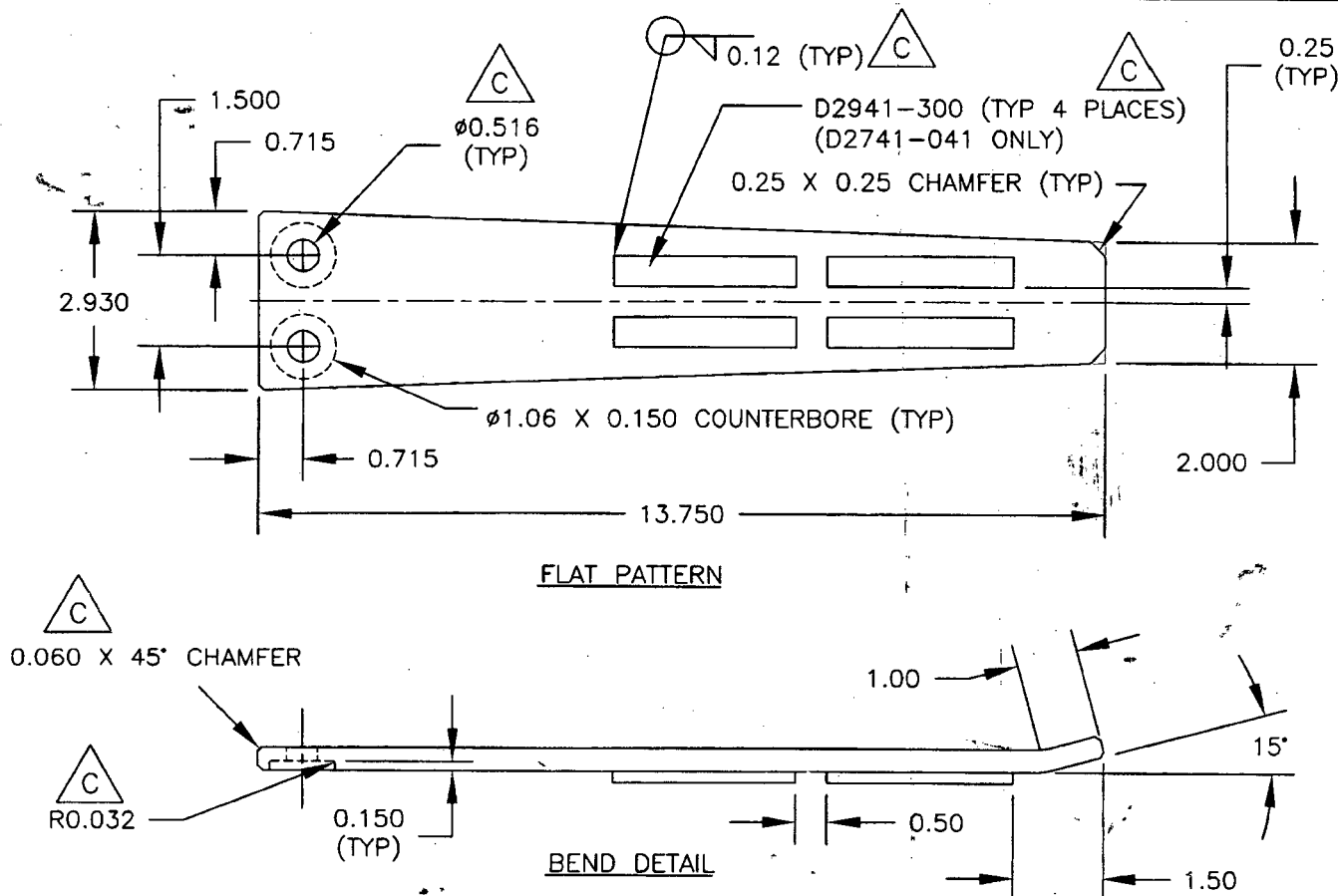
Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M4130NB0.500X03.000 4130 Bar 0.500 x 3.00		Purchased	No			100	f	0.0000	1.1541	48.593684			

M125575 x 50.9 on 13/05/16

DART

RELEASED
06.02.07

DESIGN	DRAWN BY	DART AEROSPACE USA, INC.
PH	PH	PORT HADLOCK, WA
CHECKED	APPROVED	DRAWING NO.
PH	PH	D2741
DATE		TITLE
06.01.12		BLADE
A	98.04.16	NEW ISSUE
B	98.09.01	CHANGE C'SINK TO C'BORE
C	06.01.12	LARGER HOLE ADD RADIUS AND CHAMFER ADD -041/-043 OPTIONS
		SCALE
		1:3



D2741 BLADE

- 1) MATERIAL: AISI 4130 STEEL 0.375 THICK
MIN. ULTIMATE TENSILE STRENGTH = 152 ksi (34-40 HRC)
MIN. YIELD TENSILE STRENGTH = 141 ksi
- 2) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005-4.3
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) BREAK ALL SHARP EDGES 0.030 TO 0.060
- 6) TO MAKE D2741-041, WELD D2941-300 (4) AS SHOWN ABOVE.
REMOVE POWDER COAT FROM SURFACE OF D2941-300
- 7) TO MAKE D2741-043, WELD 7560 HARDCOAT ROD INSTEAD OF D2941-300

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: AK Date: 13/06/28QA Closed: AK Date: 13/06/21

Work Order: <u>100664</u> Part No. <u>P2741</u> NCR No. <u>13-2765</u>				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input checked="" type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS Skid-tube <input checked="" type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/> Equip/Tooling <input type="checkbox"/> Operator <input type="checkbox"/> Material <input type="checkbox"/> Setup <input type="checkbox"/> Other <input type="checkbox"/> Process <input checked="" type="checkbox"/> Supplier <input type="checkbox"/> Training <input type="checkbox"/> Unapproved <input type="checkbox"/>	<u>13/05/21</u>	<u>110</u>	<u>3</u>	<u>3 parts are too small</u> <u>thickness from .005" to</u> <u>.015" under tol</u> <u>R.C. material has Bow</u> <u>AND Damt sit Flat</u> <u>on vice</u>	<u>DAS</u> <u>22</u> <u>13-05-21</u>	<u>ACCEPTABLE DEVIATION</u>	<u>AK</u> <u>13/05/21</u>	<u>SL</u> <u>13-5-21</u>	<u>DAS</u> <u>16</u> <u>13-06-20</u>		

FAULT CATEGORY												
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube			General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio			<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions			<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other			



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO19958

Purchase Order Date 5/23/2013

PO Print Date 5/23/2013

Page Number 1 of 1

Order From :

VC-MET004

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

Contact Name

Vendor Phone

450 473 1884

Vendor Fax

450 491 5498

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

FAKED
FC 8/13/05/03

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	100664	D2741 BLADE	6/7/2013 Yes	40.00	FedEx PI collect	\$10.0000	\$400.00

Special Inst: Harden mat. as per DWG: D2741 rev c
Min ultimate tensile strength = 152KSI (34-
40 HRC)
Min yield tensile Strength = 141 KSI
detail Test report of Cert. required
Sandblast part after heat treat

PO Total:

\$400.00

Change Nbr: 1

Change Date: 5/23/2013

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required - YES NO

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL Order	EXPÉDITEUR Shipper ID	BON D'EXPÉDITION Shipper
186640	1	72261

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

LIVRÉ À /Shipped To

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

COMMANDE DU CLIENT Customer PO	BON DE LIVRAISON DU CLIENT Customer Shipper No.	TYPE DE MATÉRIEL Material Type	DATE DE LA COMMANDE Order Date	TRANSPORTEUR Carrier
PO19958		4130	5/24/2013	FEDEX

QUANTITÉ Quantity	No. PIÈCE / Part No.	NOM DE LA PIÈCE / Part Name	DESCRIPTION DE LA PIÈCE Part Description	POIDS Weight
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40 D2741
BLADE
(4) BLADE
DWG. REV. : C
REFERENCE 100664
141,

CONTENANT: 4 BOÎTES DE CARTON

TYPE DE CONTENEUR Container Type	# DE CONTENEURS # Of Containers	COMMENTAIRES CONTENEUR Container Comments
BOITE DE CARTON	4	

CERTIFICAT

EMPAQUETAGE Packing	
------------------------	--

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 40
POIDS EXPÉDIÉ / Weight Shipped : 141,00
QUANTITÉ RESTANTE / Quantity Remaining : 0
POIDS RESTANT / Weight Remaining : 0,00

CERTIFICAT

QUANTITÉ EXPÉDIÉE /Quantity Shipped: 40

POIDS EXPÉDIÉ / Weight Shipped : 141,00

Signature:

Date:



METCOR INC.

560 BOUL. ARTHUR-SAUVÉ

ST-EUSTACHE, QC, J7R 5A8

Tel.: 450 473-1884 / Téléc. / Fax : 450 491-5498

Certificat de Conformité

Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
186640	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
PO19958		4130		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV.E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	40	37.0 - 39.0 HRC
TENSILE (KSI)	152 - 182 KSI		166.0 - 177.0 KSI

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
40	141	D2741 BLADE (4) BLADE DWG. REV. : C REFERENCE 100664 CONTENANT: 4 BOÎTES DE CARTON

COMMENTAIRES / comments

LES TRAITEMENTS THERMIQUES SUR CETTE COMMANDE A ÉTÉ FAIT EN UTILISANT DE S ÉQUIPEMENTS EN CONFORMITÉ AVEC LES REQUIS DE LA SPÉCIFICATION AMS2759. TOUTES LES OPÉRATIONS DE TRAITEMENT THERMIQUE ONT ÉTÉ FAITES EN CONFORMITÉ AVEC LES REQUIS DE LA SPÉCIFICATION DEMANDÉE ET TOUTES LES VÉRIFICATIONS ET LES TESTS DEMANDÉES ONT ÉTÉ FAITES ET DOCUMENTÉS.

AUCUN CHANGEMENT OU DÉROGATION N'A ÉTÉ FAITE PAR RAPPORT AU TRAITEMENT THERMIQUE DEMANDÉ. ON CERTIFIE QUE LE MATÉRIEL A ÉTÉ FABRIQUÉ, ÉCHANTILLONNÉ, TESTÉ ET INSPECTÉ EN ACCORD AVEC LES SPÉCIFICATIONS DU MATÉRIEL ET LE BON DE COMMANDE ET LE MATÉRIEL RENCONTRE LES EXIGENCES SPÉCIFIÉS.

ACCOMPLISHED USING HEAT TREATMENT EQUIPEMENT THAT MEETS THE REQUIREMENTS OF AMS 2759. ALL THE HEAT TREATMENT OPERATIONS WERE ACCOMPLISHED IN ACCORDANCE WITH THE REQUESTED/REQUIRED HEAT TREATMENT SPECIFICATION AND ALL REQUIRED VERIFICATIONS TEST HAVE BEEN PERFORMED AND DOCUMENTED. NO UNAUTHORIZED CHANGES OR ALL THE HEAT TREATMENT



METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC, J7R 5A8

Tel.: 450 473-1884 / Téléc. / Fax : 450 491-5498

Certificat de Conformité

Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
186640	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

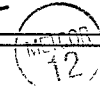
1

PROCESSING PERFORMED ON THIS ORDER WAS DEVIATIONS TO REQUIRED HEAT TREATMENT SPECIFICATIONS OR PROCEDURES HAVE BEEN PERFORMED.

WE CERTIFY THAT THE MATERIAL WAS MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE MATERIAL SPECIFICATION AND THE PURCHASE ORDER AND WAS FOUND TO MEET THE REQUIREMENTS.

CERTIFIÉ par / Certified by:

DATE: 2013-06-07



Certificat de Conformité
Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
186640	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

1

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
PO19958		4130		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

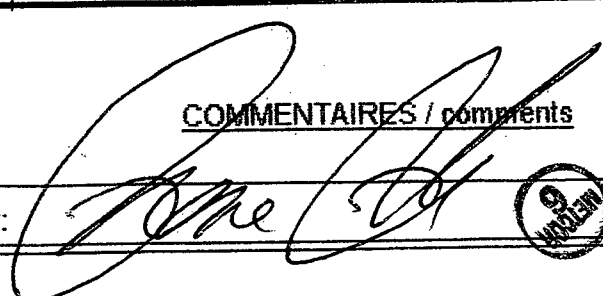
SAE AMS 2759/1 REV.E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	40	37.0 - 39.0 HRC
TENSILE (KSI)	152 - 182 KSI		166.0 - 177.0 KSI

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
40	141	D2741 BLADE (4) BLADE REFERENCE 100864 CONTENANT: 4 BOÎTES DE CARTON

COMMENTAIRES / comments

CERTIFIÉ par / Certified by:



DATE: 2013-06-07

07 Juin